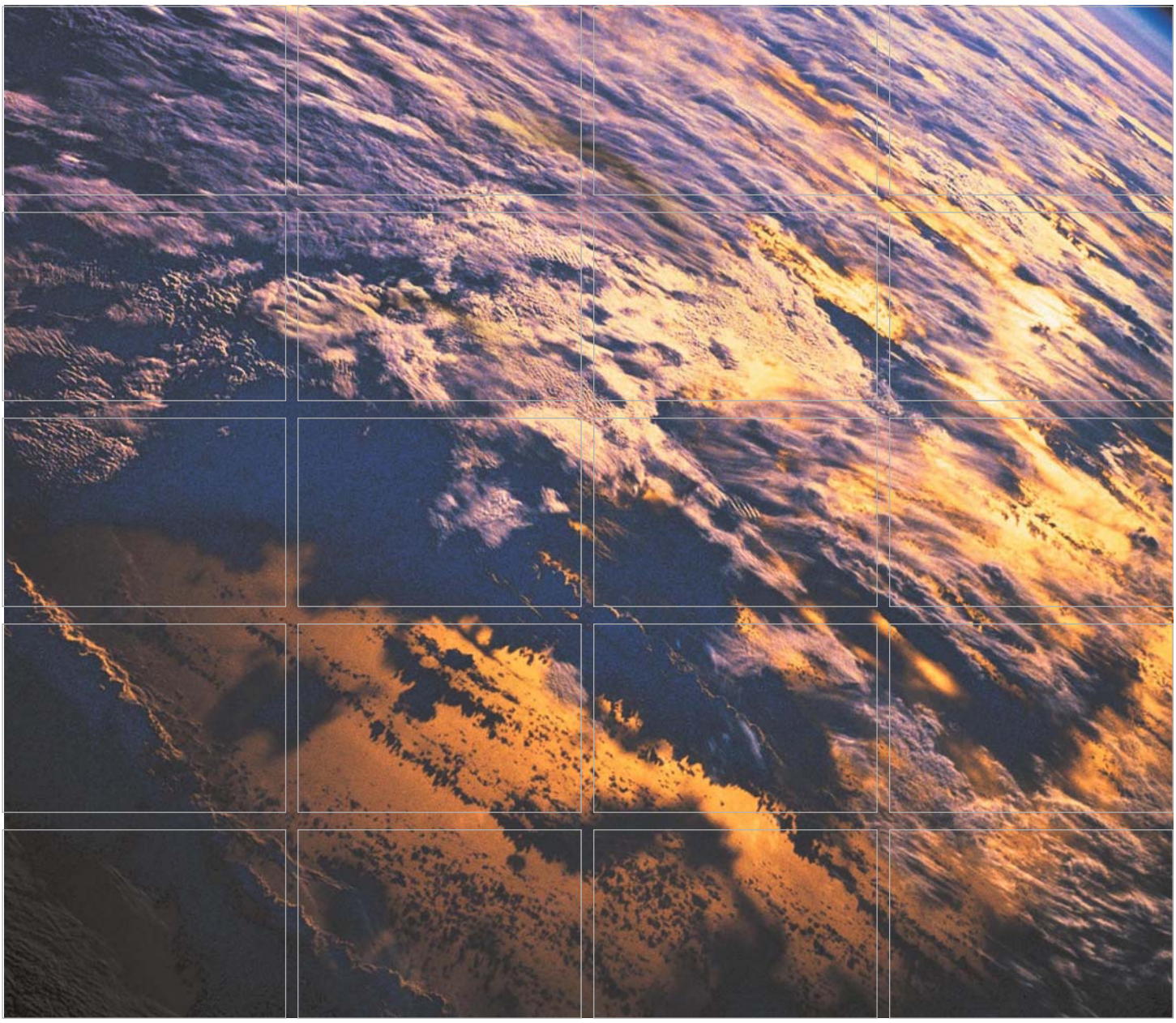

Braskem America, Inc.

Braskem Marcus Hook Expansion Project
Marcus Hook, Pennsylvania

January 2016

Revision A: July 2016

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3.0 DETAILED PROJECT EMISSIONS ANALYSIS

This section describes the calculations and assumptions made to estimate the emissions associated with Braskem Marcus Hook Expansion Project. The emissions from each source identified in **Section 2** including nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), VOC, particulate matter (PM), particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and greenhouse gas emissions (carbon dioxide equivalents [CO_2e]) are provided in this section. **Table 3-18** at the end of this section provides the total Project emissions. Detailed emissions calculations are shown in **Attachment C**.

3.1 H-5 AREA EMISSIONS

Increases in delivery of the primary feedstocks for the Braskem facility at Marcus Hook to support the proposed production increase will result in VOC emissions from the H-5 Area. Operations resulting in emissions from the RGP Storage Expansion include maintenance purges, and additional fugitive emissions as discussed below in **Section 3.1.1**. Operations resulting in emissions from the PGP Unloading and Transfer Expansion include maintenance purges, railcar system depressurizations, and additional fugitive emissions as discussed below in **Section 3.1.2**.

3.1.1 H-5 Area – RGP Storage Expansion Emissions

Periodically, the new storage bullet and piping will need to be purged to the flare as part of scheduled maintenance. Liquid remaining in piping and connections will be vented to the Ethylene Complex Flare where it will be combusted. The Ethylene Complex Flare VOC destruction efficiency is assumed to be 98%. Conservatively, 10% of gas mass was estimated to be released directly to the atmosphere as part of the maintenance purge. Estimated VOC emissions resulting from uncombusted VOCs at the flare as well as gas released directly to the atmosphere are shown in **Table 3-1** below.

Additionally, operation of the RGP storage expansion will result in VOC fugitive emissions from the installation of new piping and new storage. The component counts for the new equipment are included in the total counts in **Section 3.4** and **Table 3-15** below**.** Fugitive emissions resulting from the RGP storage expansion are shown in **Table 3-1** below.

Table 3-1 Projected RGP Storage Expansion Emissions

Source	TVOP Source ID	Emissions Type	VOC Emissions (TPY)
RGP Storage Bullet	107	Maintenance Purges	0.02
		Fugitive Emissions	0.49
		Total	**0.51**

3.1.2 H-5 Area – PGP Unloading and Transfer Expansion Emissions

At the completion of railcar unloading at the H-5 Area, Braskem depressurizes the operating compressors and associated piping downstream of the compressors to the Ethylene Complex Flare. This practice is consistent with current operations at the facility. The volumes of the compressor system and associated piping have been estimated based on design drawings and the total propylene vapor volume that will be sent to the flare has been calculated for the compressor system. The Ethylene Complex Flare VOC destruction efficiency is assumed to be 98%. The estimated depressurization VOC emissions from the new compressor system are shown in **Table 3-2** below.

Periodically, the new PGP unloading piping system will need to be purged to the flare as part of scheduled maintenance. Liquid remaining in RGP unloading piping and connections will be vented to the Ethylene Complex Flare where it will be combusted. Conservatively, 10% of gas mass was estimated to be released directly to the atmosphere as part of the maintenance purge. Estimated VOC emissions resulting from uncombusted VOCs at the flare as well as gas released directly to the atmosphere are shown in **Table 3-2** below.

Additionally, operation of the H-5 Area will result in VOC fugitive emissions from the installation of new piping. The component counts for the new equipment are included in the total counts in **Section 3.4** and **Table 3-15** below**.** Fugitive emissions resulting from the PGP unloading piping are shown in **Table 3-2** below.

Table 3-2 Projected H-5 Area PGP Unloading and Transfer Expansion Emissions

Source	TVOP Source ID	Emissions Type	VOC Emissions (TPY)
PGP Unloading Compressors	107	Railcar System Depressurizations	0.25
		Maintenance Purges	0.03
		Fugitive Emissions	0.69
		Total	**0.96**

3.2 SPLITTER AREA EMISSIONS

Necessary operational changes to handle the proposed production increase will result in emissions from the Splitter Area. The proposed IRPL connection operations including meter proving, maintenance purges, and fugitive emissions will result in VOC emissions as discussed in **Section 3.2.1**. The proposed Propane Return Line and P1/P2 Product Transfer Pumps upgrade will both result in VOC emissions from maintenance purges and piping fugitives as discussed in **Sections 3.2.2 and 3.2.3** respectively. As a result of increased throughput, an incremental increase in dryer regenerations will occur as discussed in **Section 3.2.4**.

3.2.1 Splitter Area – IRPL Connection Emissions

Meter prover blowdown events will be controlled by the existing Ethylene Complex Flare. The blowdown volume was calculated using design specifications. It was assumed that 98 percent of the meter prover piping volume would be sent to the Ethylene Complex Flare, which is assumed to achieve 98% destruction efficiency. The controlled meter prover blowdown VOC emissions are incorporated into the additional flare emissions discussed in **Section 3.4** and **Table 3-15** below**.** The uncontrolled meter prover blowdown VOC emissions are shown below in **Table 3-3**.

Purges of the piping associated with the proposed IRPL connection will need to be performed as part of maintenance. Liquid remaining in IRPL connection will be vented to the Ethylene Complex Flare where it will be combusted. Conservatively, 10% of gas mass was estimated to be released directly to the atmosphere as part of the maintenance purge. Estimated VOC emissions resulting from uncombusted VOCs at the flare as well as gas released directly to the atmosphere are shown in **Table 3-3** below.

Operation of the IRPL connection will result in VOC fugitive emissions from piping additions. The component counts for the new equipment are included in the total counts in **Section 3.4** and **Table 3-15** below**.** Fugitive emissions resulting from the IRPL connection are shown in **Table 3-3** below.

Table 3-3 Projected IRPL Connection Emissions

Source	TVOP Source ID	Emissions Type	VOC Emissions (TPY)
IRPL Connection	106	IRPL Meter Proving	0.01
		Maintenance Purges	0.001
		Fugitive Emissions	0.57
		Total	**0.58**

3.2.2 Splitter Area – Propane Return Line Emissions

As part of maintenance, purges of the piping associated with the proposed Propane Return Line will need to be performed. Liquid remaining will be vented to the Ethylene Complex Flare, which is assumed to achieve 98% destruction efficiency, where it will be combusted. Conservatively, 10% of gas mass was estimated to be released directly to the atmosphere as part of the maintenance purge. Estimated VOC emissions resulting from uncombusted VOCs at the flare as well as gas released directly to the atmosphere are shown in **Table 3-4** below.

Operation of the Propane Return Line will result in VOC fugitive emissions from the installation of new piping. The component counts for the new equipment are included in the total counts in **Section 3.4** and **Table 3-15** below**.** Fugitive emissions resulting from the Propane Return Line are shown in **Table 3-4** below.

Table 3-4 Projected Propane Return Line Emissions

Source	TVOP Source ID	Emissions Type	VOC Emissions (TPY)
Propane Return Line	106	Maintenance Purges	0.08
		Fugitive Emissions	0.34
		Total	**0.42**

3.2.3 Splitter Area – P1/P2 PGP Product Transfer Pumps Upgrade Emissions

As part of maintenance, Braskem will periodically purge the material in the entire product transfer system. Liquid remaining will be vented to the Ethylene Complex Flare, which is assumed to achieve 98% destruction efficiency, where it will be combusted. Conservatively, 10% of gas mass was estimated to be released directly to the atmosphere as part of the maintenance purge. Estimated VOC emissions resulting from uncombusted VOCs at the flare as well as gas released directly to the atmosphere are shown in **Table 3-5** below.

Operation of the P1/P2 PGP Product Transfer Pumps upgrade will result in VOC fugitive emissions from the installation of necessary piping connections. The component counts for the new equipment are included in the total counts in **Section 3.4** and **Table 3-15** below**.** Fugitive emissions resulting from the P1/P2 PGP Product Transfer Pumps are shown in **Table 3-5** below.

Table 3-5 Projected P1/P2 PGP Product Transfer Pumps Upgrade Emissions

Source	TVOP Source ID	Emissions Type	VOC Emissions (TPY)
P1/P2 PGP Product Transfer Pumps	106	Maintenance Purges	9.7E-05
		Fugitive Emissions	0.14
		Total	**0.14**

3.2.4 Splitter Area – Incremental Dryer Regenerations Emissions

Increased throughput will result in an increase in the frequency that the Splitter Area Dryers need to be regenerated resulting in a purge to the Ethylene Complex Flare, which is assumed to achieve 98% destruction efficiency. Emissions for dryer regenerations were estimated based two year average purge rate and seven (7) additional events per year. Uncombusted incremental regeneration emissions are shown below in **Table 3-6.**

Table 3-6 Projected Incremental Splitter Area Dryer Regenerations Emissions

Source	TVOP Source ID	Emissions Type	VOC Emissions (TPY)
Splitter Area Dryers	106	Incremental Dryer Regenerations	0.08

3.3 POLYMERS UNITS EMISSIONS

Necessary operational changes to handle the proposed production increase will result in emissions from the Polymers Units. The required Propylene Charge Pumps maintenance purges and fugitive emissions will result in VOC emissions as discussed in **Section 3.3.1**. Elutriator and Baghouse modifications will result in PM emissions increases as discussed in **Section 3.3.2**. Incremental increases in emissions from existing processes including Propane Return Line Filter Changing, Propylene Degassing Column usage, Polymers Units Dryer Regenerations, Product Purge Bin Purging, and Storage Silos Purging are discussed in **Sections 3.3.3 through 3.3.7**.

3.3.1 Polymers Units – Propylene Charge Pumps Modifications Emissions

As part of maintenance, Braskem will periodically purge the material in the Propylene Charge Pumps system. Liquid remaining will be vented to the Braskem Flare, which is assumed to achieve 99.5% destruction efficiency, where it will be combusted. Conservatively, 10% of gas mass was estimated to be released directly to the atmosphere as part of the maintenance purge. Estimated VOC emissions resulting from uncombusted VOCs at the flare as well as gas released directly to the atmosphere are shown in **Table 3-7** below.

Operation of the modified Propylene Charge Pumps system will result in VOC fugitive emissions from the installation of necessary piping connections. The component counts for the new equipment are included in the total counts in **Section 3.4** and **Table 3-15** below**.** Fugitive emissions resulting from the Propylene Charge Pumps are shown in **Table 3-7** below.

Table 3-7 Projected Propylene Charge Pumps Emissions

Source	TVOP Source ID	Emissions Type	VOC Emissions (TPY)
Propylene Charge Pumps	102A	Maintenance Purges	5.6E-05
		Fugitive Emissions[1]	0.08
	102B	Maintenance Purges	5.6E-05
		Fugitive Emissions[1]	0.08
	Total Emissions		**0.15**

[1] Fugitive components for the Charge Pump Jumper will be installed in both Plant 1 (102A) and Plant 2 (102B). Accordingly the fugitive emissions associated with this piping connection have been evenly split between Plant 1 and Plant 2.

3.3.2 Polymers Units – Manufacturing Baghouse Modifications Emissions

Plant 1 and Plant 2 PM emissions will be controlled by new or repurposed baghouses. A new baghouse will be installed for Plant 2. The new Plant 2 baghouse is sized for 6,300 standard cubic feet per minute (scfm) and is guaranteed to meet the 0.02 gr/dscf outlet PM emission standard. The existing Plant 2 baghouse (2,882 scfm) will be repurposed to control Plant 1 particulate matter emissions, which will result in an incremental emissions increased due to increased utilization. Furthermore, the current Plant 1 Elutriator Baghouse shutdown emissions are based on the most recent 24-month average emissions. Emissions from the baghouses are shown below in **Table 3-8.**

The manufacturing processes for each of the polymer plants are controlled by dedicated baghouses. An increase in utilization will result in incremental emissions increases from these baghouses. Emissions were estimated based on the historical emission factor which accounts for the baghouse collection and control efficiencies. Emissions from each of the baghouses are shown below in **Table 3-8.**

Table 3-8 Projected Polymers Units Baghouses Emissions

Source	TVOP Source ID	Emissions Type	$PM/PM_{10}/PM_{2.5}$ Emissions (TPY)
Polymers Units Baghouses	102A	Plant 1 Manufacturing Baghouses	2.49
	102B	Plant 2 Manufacturing Baghouses	4.84
	Total Baghouse Emissions		**7.33**

3.3.3 Polymers Units – Propane Return Line Filter Changing Emissions

Braskem has determined that increased throughput will require more frequent filter changes as well as an increased filter size. Emissions were estimated based on the difference between current and planned vent volume per filter, two filters, and thirteen (13) additional filter changes per year. During filter changes, the filter system will be purged to the Braskem Flare, which is assumed to achieve 99.5% destruction efficiency. The total emissions increase resulting from Propane Return Line Filter Changing is shown in **Table 3-9** below.

Table 3-9 Projected Propane Return Line Filter Changing Emissions

TVOP Source ID	Source	VOC Emissions (TPY)
102A	Plant 1 - Propane Return Line Filter Changing	0.05
102B	Plant 2 - Propane Return Line Filter Changing	0.05
Total Propane Return Line Filter Changing Emissions		**0.11**

3.3.4 Polymers Units – Incremental Propylene Degassing Column Emissions

Braskem has determined that increased throughput will result in additional supplemental propylene purged to the Braskem Flare, which is assumed to achieve 99.5% destruction efficiency. Incremental emissions were estimated based on the most recent 24-month average degassing rate from the column and are shown in **Table 3-10** below.

Table 3-10 Projected Incremental Propylene Degassing Column Emissions

TVOP Source ID	Source	VOC Emissions (TPY)
102A	Plant 1 - Incremental Propylene Degassing Column	0.25
102B	Plant 2 - Incremental Propylene Degassing Column	0.03
Total Propylene Degassing Column Emissions		**0.27**

3.3.5 Polymers Units – Incremental Dryer Regenerations Emissions

Braskem has determined that increased throughput will result in the need for additional incremental dryer regenerations purged to the Braskem Flare, which is assumed to achieve 99.5% destruction efficiency. Incremental emissions were estimated based on the most recent 24-month average regeneration flow rates and are shown in **Table 3-11** below.

Table 3-11 Projected Incremental Polymers Units Dryer Regenerations Emissions

TVOP Source ID	Source	VOC Emissions (TPY)
102A	Plant 1 - Incremental Dryer Regenerations	0.21
102B	Plant 2 - Incremental Dryer Regenerations	0.26
Total Incremental Dryer Regenerations Emissions		**0.48**

3.3.6 Polymers Units – Incremental Product Purge Bin Purging Emissions

Braskem has determined that increased throughput will result in incremental increased throughput of unreacted propane or propylene purged to the Braskem Flare, which is assumed to achieve 99.5% destruction efficiency, from the Product Purge Bin. Emissions were estimated based on the most recent 24-month average purge bin rates and expected production increase and are shown in **Table 3-12** below.

Table 3-12 Projected Incremental Product Purge Bin Purging Emissions

TVOP Source ID	Source	VOC Emissions (TPY)
102A	Plant 1 - Incremental Product Purge Bin Purging	0.76
102B	Plant 2 - Incremental Product Purge Bin Purging	0.45
Total Incremental Product Purge Bin Purging Emissions		**1.21**

3.3.7 Polymers Units – Incremental Storage Silos Purging Emissions

Braskem has determined that increased throughput of finished polypropylene pellets production will result in an incremental increase in the trace amount of VOC and PM emissions from the storage silos. VOC emissions were estimated based on stack testing. PM emissions were based on the United States Environmental Protection Agency (USEPA) AP-42 PM emission factor for polypropylene production, the expected production increase, and an elutriator efficiency of 99.9%. The VOC and PM emissions are shown in **Table 3-13** below.

Table 3-13 Projected Incremental Storage Silos Purging Emissions

TVOP Source ID	Source	VOC Emissions (TPY)	$PM/PM_{10}/PM_{2.5}$ Emissions (TPY)
101A	Plant 1 - Incremental Storage Silos Purging	0.70	0.21
101B	Plant 2 - Incremental Storage Silos Purging	0.45	0.15
Total Incremental Storage Silos Purging Emissions		**1.15**	**0.35**

3.4 FUGITIVE EMISSIONS – PIPING COMPONENTS

This Project includes the installation of new piping equipment, associated valves, pressure relief valves, and flanges. Braskem has conservatively estimated a component count, including valves, flanges, pumps, and relief valves, based on preliminary engineering design. This component count also includes all interconnecting piping modifications. The fugitive components associated with this Project will be subject to the requirements of 40 Code of Federal Regulations (CFR) Part 60 Subpart VV for Equipment

Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. Potential fugitive emissions are based on methodologies presented in United States Environmental Protection Agency's (USEPA) Protocol for Equipment Leak Emission Estimates, EPA-453/R-95-017 using emission factors from Table 2-1. Braskem used leak detection and repair (LDAR) program data that show the control efficiencies based on actual leaking component and repair data. These control efficiencies were used in conjunction with the USEPA methodology to estimate potential fugitive emissions from the new fugitive emission components.

Estimated fugitive VOC emissions in tons per year (TPY) from potential leaks from the fugitive components are presented in **Table 3-14** below.

Table 3-14 Projected Fugitive Emissions

Affected Units	New Fugitive Components	Number of Components	Emissions[1] (TPY)
Braskem Marcus Hook Expansion Project	Gas Valves	34	0.06
	Light Liquid Valves	115	0.56
	Control Valves	10	0.02
	Check Valves	10	0.04
	Pressure Relief Valves	7	0.05
	Drains	43	0.20
	Strainers	1	0.01
	Flanges	335	1.41
	Compressors	2	0.03
	Pump Seals	0	0.00
	Sample Connections	1	0.01
Total VOC Fugitive Emissions			**2.39**

[1] Potential fugitive emissions are estimated based on USEPA guidance correlations ("Protocol for Equipment Leak Emission Estimates", EPA-453/R-95-017).

3.5 INCREMENTAL FLARE EMISSIONS

As a result of the Project a number of new or incrementally increased flows will be controlled by the existing flares. The fugitive components and associated emissions for these processes are included in the sections above.

The increased utilization of the existing H-5 and Splitter Areas equipment, including compressor depressurizations, maintenance purges, meter proving, and dryer regenerations, will require an incremental increase in venting to the Ethylene Complex Flare system.

In addition, increased utilization of the existing Polymers Units will also result in increased utilization of the Braskem Flare. Operations venting to the Braskem Flare include maintenance purges, propane return filter changes, propylene degassing, dryer regenerations, and purge bin usage.

The flares primarily exist to handle emission releases in the event of an emergency depressurization event. The incremental flare emissions, shown in **Table 3-15** below, are based on the incremental expected sweep gas flow as well as other intermittent operations discussed in the Sections above. USEPA AP-42 Chapter 13.5 and 40 CFR Part 98 Subpart C emission factors were used to calculate emissions. VOC emissions from uncombusted flare flows are included in totals for the point of origin in **Sections 3.1 through 3.3** above. For the Braskem Flare, VOC emissions resulting from the incremental natural gas combustion, which is used to maintain the 300 British Thermal Unit per standard cubic foot (Btu/scf) higher heating value of 40 Code of Federal Regulations (CFR) Part 60.18(c)(3)(ii), are also shown below in **Table 3-15.**

Table 3-15 Projected Incremental Flare Emissions

Pollutant	Incremental Flare Emissions (TPY)	
	Ethylene Complex Flare	Braskem Flare
NO_x	0.03	0.81
CO	0.14	3.81
VOC	- - -	0.52
CO_2e	1,285	35,915

3.6 INCREMENTAL STEAM DEMAND EMISSIONS

The total future projected annual average steam demand for the MHIC is approximately 584.7 thousand pounds per hour of steam (Mlb/hr) as shown in **Table 2-1** above. As shown in **Table 3-16** below, the emissions associated with this steam demand are calculated using baseline actual emissions and average actual steam production from calendar years 2009 and 2010. The overall MHIC steam demand (approximately 584.7 Mlb/hr) is below the baseline steam demand (approximately 849 Mlb/hr) and the expected emissions associated with the MHIC steam demand are below the operating permit limits for the Auxiliary Boilers. Therefore, there is no incremental steam required by this Project and thus, there are no incremental emissions increases from the Auxiliary Boilers.

Table 3-16 Projected Incremental Steam Demand Emissions

Parameter	Total Auxiliary Boiler Emissions						
	2009 AIMS (TPY)	2010 AIMS (TPY)	2009/2010 Baseline Average (TPY)	Average Emission Factors (lb/lb steam)	TV Operating Permit Limits for Auxiliary Boilers (TPY)[1,2]	Auxiliary Boiler Expected Emissions (TPY)	Facility Expected Emissions Below Operating Limits? (Yes/No)
NO_x	106.67	81.60	94.14	2.53E-05	118.54	64.76	Yes
SO_2	2.51	2.10	2.30	6.19E-07	41.70	1.58	Yes
VOC	3.18	2.48	2.83	7.60E-07	7.32	1.95	Yes
CO	17.17	11.38	14.27	3.83E-06	113.67	9.82	Yes
$PM/PM_{10}/PM_{2.5}$	19.06	14.89	16.97	4.56E-06	26.37	11.68	Yes
H_2SO_4	0.15	0.13	0.14	3.77E-08	4.20	0.10	Yes
CO_2e (metric TPY)	316,981	255,067	286,024	7.68E-02	- - -	196,755	- - -
Lead	1.02E-04	6.79E-05	8.48E-05	2.28E-11	- - -	5.83E-05	- - -
HAP	2.43	2.29	2.36	6.34E-07	- - -	1.62	- - -
Average Steam Load (lb/hr)	972,822	726,974	849,898	- - -	- - -	584,700	- - -

[1] The potential to emit for the Auxiliary Boilers was established with the SPMT Natural Gasoline Project (Plan Approval 23-0119B).

[2] Note that Auxiliary Boiler 2 (Source ID 032 of Title V Operating Permit 23-00119) has been permanently been taken out of service.

3.7 TOTAL PROJECT EMISSIONS

Table 3-17 below provides the total Braskem Marcus Hook Expansion Project emissions

Table 3-17 Total Braskem Marcus Hook Expansion Project Emissions

TVOP Source ID	Project Source	VOC Emissions (TPY)	NO_x Emissions (TPY)	PM Emissions (TPY)	PM_{10} Emissions (TPY)	$PM_{2.5}$ Emissions (TPY)	CO Emissions (TPY)	CO_2e Emissions (TPY)
H-5 AREA								
107	RGP Storage Expansion	0.51	---	---	---	---	---	---
	PGP Unloading and Transfer Expansion	0.96	---	---	---	---	---	---
SPLITTER AREA								
106	IRPL Connection	0.58	---	---	---	---	---	---
	Propane Return Line from the Polymers Units	0.42	---	---	---	---	---	---
	P1/P2 PGP Product Transfer Pumps Upgrade	0.14	---	---	---	---	---	---
	Incremental Dryer Regenerations	0.08	---	---	---	---	---	---
C100[1]	SPMT Ethylene Complex Flare	---	0.03	---	---	---	0.14	1,285
POLYMERS UNITS								
101A	Incremental Storage Silos Purging	0.70	---	0.21	0.21	0.21	---	---
102A	Propylene Charge Pumps Modifications[2]	0.08	---	---	---	---	---	---
	Plant 1 Manufacturing Baghouses	---	---	2.49	2.49	2.49	---	---
	Propane Return Line Filter Changing	0.05	---	---	---	---	---	---
	Incremental emissions (Degassing Column, Dryer Regenerations, and Purge Bin Purging)	1.23	---	---	---	---	---	---
101B	Incremental Storage Silos Purging	0.45	---	0.15	0.15	0.15	---	---
102B	Propylene Charge Pumps Modifications[2]	0.08	---	---	---	---	---	---
	Plant 2 Manufacturing Baghouses	---	---	4.84	4.84	4.84	---	---
	Propane Return Line Filter Changing	0.05	---	---	---	---	---	---
	Incremental emissions (Degassing Column, Dryer Regenerations, and Purge Bin Purging)	0.74	---	---	---	---	---	---
C02	Braskem Flare	0.52	0.81	---	---	---	3.67	34,631
Total Emissions (TPY)		**6.59**	**0.84**	**7.68**	**7.68**	**7.68**	**3.81**	**35,915**

[1] Ethylene Complex Flare (Source ID C100) located at the Marcus Hook Industrial Complex (MHIC) operated by Sunoco Partners Marketing & Terminals, L.P. (SPMT).

[2] Fugitive components for the Charge Pump Jumper will be installed in both Plant 1 (102A) and Plant 2 (102B). Accordingly the fugitive emissions associated with this piping connection have been evenly split between Plant 1 and Plant 2.

7.0 SUGGESTED PERMIT CONDITIONS

Braskem is seeking approval to revise emission limits associated Plant 1 (Source ID 102A), and Plant 2 (Source ID 102B) to allow their debottlenecked operation. As part of this revision, Braskem proposes that Source 102B, Condition #002 should be removed as the polypropylene production rate is not directly proportional to either VOC or PM emission rates. Braskem is also suggesting additional emission limit revisions in order to account for the operation of new fugitive equipment and the increased utilization of existing equipment. Suggested permit conditions and revisions to the facility's existing Title V Operating Permit No. 23-00012 are shown in **Table 7-1** below.

Table 7-1 Suggested Permit Conditions and Revisions

Section / Source ID / Condition	Current Condition	Suggested Condition
Section D / Source ID 102A	Not applicable	The production rate of Polypropylene Plant Number 1 and Polypropylene Plant Number 2 combined is limited to 595,680 tons of polypropylene per year on a twelve (12) month rolling basis.
Section D / Source ID 102B / Conditions #001(a) - (b)	(a) The combined Volatile Organic Compounds (VOC) emissions from the Polypropylene Plant No.2 shall not exceed 24.30 tons per year on a twelve (12) month rolling basis. (b) The combined Particulate Matter (PM) emissions from the Polypropylene Plant No.2 shall be less than 2.1 tons per year on a twelve (12) month rolling basis.	(a) The combined Volatile Organic Compounds (VOC) emissions from the Polypropylene Plant No.2 shall not exceed 24.30 tons per year on a twelve (12) month rolling basis. (b) The combined Particulate Matter (PM) emissions from the Polypropylene Plant No.2 shall be less than 6.77 tons per year on a twelve (12) month rolling basis.
Section D / Source ID 102B / Condition #002	The production rate of Polypropylene Plant Number 2 is limited to a maximum of 240,900 tons of polypropylene per year on a twelve (12) month rolling basis.	The production rate of Polypropylene Plant Number 1 and Polypropylene Plant Number 2 combined is limited to 595,680 tons of polypropylene per year on a twelve (12) month rolling basis.